REMARKS

Prior to the present amendment and response, claims 1-7, 9-11, 13-21, and 32-34 were pending in the present application. By the present amendment, claims 1, 5, 7, and 11 have been amended. Thus, after the present amendment, claims 1-7, 9-11, 13-21, and 32-34 remain in the present application. Reconsideration and allowance of outstanding claims 1-7, 9-11, 13-21, and 32-34 in view of the above amendments and the following remarks are respectfully requested.

A. Rejection of Claims 1-7, 9-11, 13-21, and 32-34 under 35 USC §103(a)

The Examiner has rejected claims 1-7, 9-11, 13-21, and 32-34 under 35 USC §103(a) as being unpatentable over U.S. Patent Number 5,922,065 to Hull, et al. ("Hull") in view of U.S. Patent Number 6,457,173 to Gupta, et al. ("Gupta"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by amended independent claim 1, is patentably distinguishable over Hull and Gupta, either singly or in combination.

Various embodiments according to the present invention, as defined by amended independent claim 1, relate to decoding very long instruction word (VLIW) packets. Assembly code is provided for each one of a plurality of instructions in a first combination of instructions in a VLIW packet. A template is matched in the VLIW packet to a known template corresponding to one of a plurality of known syntaxes. The plurality of known syntaxes are arranged as a plurality of first level nodes in a tree

structure and include programming notation that indicate the end of a particular issue group. Each of a plurality of second level nodes in the tree structure includes a combination of instruction types. A plurality of paths extends between node levels, and each node of the plurality of first level nodes and the plurality of second level nodes has a path to a node of a different node level. See, for example, Figure 2 of the present application.

Furthermore, each of a plurality of third level nodes in the tree structure includes an instruction type. One of the plurality of known syntaxes is matched with a resolved packet syntax using the tree structure. The resolved packet syntax is used to determine assembly code associated with execution of the first combination of instructions.

For example, the programming notation "MIsIs" refers to a VLIW packet having execution unit M assigned to instruction slot 106 and execution unit I assigned to instruction slot 108. The lower case letter "s" indicates that the first and second instructions located respectively in instruction slots 106 and 108 form a single issue group. According to this exemplary programming notation (i.e. the notation "MIsIs"), execution unit I is assigned to instruction slot 110. Moreover, since there is a "stop" or "s" after the second "I" in programming notation "MIsIs", the instruction located in instruction slot 110 would not be chained to an issue group in the next VLIW packet. In other words, the instruction located in instruction slot 110 is in an issue group by itself.

Accordingly, programming notation "MIsIs" defines a unique known syntax that includes programming notation indicating the end of an issue group, which is then

matched with a resolved packet syntax using said tree structure. More importantly, the invention as defined by amended independent claim 1 allows for the decoding of a first composite packet that contains a plurality of unique chaining and issue grouping information.

In contrast, Hull is directed to a processor that utilizes a template field for encoding a set of most useful instructions in a wide-word format. Moreover, Hull does not teach matching a template in a first composite packet to a known template corresponding to one of a plurality of known syntaxes using a tree structure. Furthermore, Hull designates only a single "S-bit" per bundle of instructions. See Hull, column 3, lines 52-55 and Figure 3. More specifically, Hull does not teach a way to decode a VLIW instruction containing multiple "stop" bits, such as the instruction "MIsIs" discussed in the example above, using a tree structure. Thus, Hull does not, teach, disclose, or suggest "matching a template in said first composite packet to a known template corresponding to one of a plurality of known syntaxes that includes information indicating multiple stop bits that correspond to endings of issue groups and includes information corresponding to chaining, wherein said plurality of known syntaxes are arranged as a plurality of first level nodes in a tree structure," as required by amended independent claim 1.

In contrast to the present invention as defined by amended independent claim 1, Gupta discloses the structure of an if-tree that defines how each instruction of a VLIW processor is built. Gupta, however, as seen in Figure 2, designates a single bit to the

"consume to end-of-packet" (CEP) bit field, which is a functional equivalent to a "stop" bit. As a result, Gupta cannot decode particular programming notation, such as "MIsIs" as discussed above, containing more than one CEP (stop) bit using the if-tree it discloses. Accordingly, claim 1 has been amended to include the feature of decoding instructions containing multiple stop bits and now requires "matching a template in said first composite packet to a known template corresponding to one of a plurality of known syntaxes that includes information indicating multiple stop bits that correspond to endings of issue groups and includes information corresponding to chaining, wherein said plurality of known syntaxes are arranged as a plurality of first level nodes in a tree structure."

Furthermore, as seen in Figure 2, each template in Gupta's if-tree, such as Templates 134 and 136, only "encode the sets of operations that issue concurrently." See Gupta, column 12, lines 22-23. Thus, the if-tree in Gupta is not even capable of decoding a VLIW packet that includes instructions belonging to different issue groups. Consequently, Gupta does not teach, disclose, or suggest the invention as defined by amended independent claim 1. Therefore, Gupta, either singly or in combination with Hull, does not teach, disclose, or suggest the present invention as defined by amended independent claim 1.

For the foregoing reasons, Applicant respectfully submits that the present invention, as defined by amended independent claim 1, is not taught, disclosed, or suggested by the art of record. Thus, amended independent claim 1 is patentably

distinguishable over the art of record. As such, the claims depending from amended independent claim 1 are, *a fortiori*, also patentable for at least the reasons presented above and also for additional limitations contained in each dependent claim.

B. Conclusion

Based on the foregoing reasons, the present invention, as defined by amended independent claim 1, and the claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, outstanding claims 1-7, 9-11, 13-21, and 32-34 are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance Notice of Allowance directed to all claims 1-7, 9-11, 13-21, and 32-34 remaining in the present application is respectfully requested.

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Respectfully Submitted,
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